importance. It was this point which went far towards determining the general trend of the Report of the Committee of the Conjoint Board.

The present policy of the Decimal Association must be examined with this difference in mind. The Association suggests a step-by-step transition, leading to a gradual familiarisation of the country with metric units, until the opposition is so far reduced that a compulsory metric system Act becomes possible. As a first step, the pound avoirdupois is to be readjusted so as to become exactly equal to half a kilogram—an increase of about 10 per cent. The official policy of the Association is to alter the ounce, dram, and grain similarly, retaining their present ratios. Dr. Guillaume prefers, if there is to be a "piecemeal" policy, to make the new pound (500 grams), contain 20 ounces, 250 drams, and 10,000 grains, the percentage changes in magnitude being of about the same order, but not all in the same direction.

It will be seen that, in itself, a change of this sort could probably be made without serious difficulty, if it were thought to be necessary. That is to say, if a deliberate and agreed decision had been come to that the metric system exclusively was to be employed in Great Britain, the transition might well have been begun in this way. In the absence of such a decision, the position is less clear. A certain amount of inconvenience must inevitably arise, particularly in the introduction of a new series of weights and measures in retail trade; and although the ultimate introduction of the metric system might be facilitated by the proposed modification, it is scarcely likely that those who are opposed to the end in view will offer any less opposition to the means employed. Faced with the ultimate proposal, that the inch should be altered to constitute one-fortieth of a metre—and this is probably the least objectionable line of action open—no concession is to be expected from opponents in favour of a first step, which does not, in itself, present very obvious advantages. It is probably far too seldom realised that the great objection to the metric system is based upon the incommensurability of the British and metric units of length. The real battle lies between the inch and the centimetre. If the alteration of either, to make it commensurable with the other, could be admitted, then its ultimate abolition could follow without much difficulty.

The view is quite widely held that the Imperial units are, as magnitudes, more suitable for commercial purposes than the metric. There is, therefore, at least a possibility that the solution of the metric controversy may be found in the development of a system based upon the British units, but so modified as to be capable of treatment on pure decimal lines. The Report of the Committee of the Conjoint Board suggests that the possibilities of such a solution should be explored, and one experiment in this direction has already been tried with success. The troy pound was abolished in 1878, but the troy ounce was too firmly established to be dismissed entirely. Trade in the precious metals, however, is now carried on in terms of troy ounces only, and bullion weights are made up solely in decimal multiples and sub-multiples of that unit. There has certainly been some activity in this direction in recent years, and should a really logical system upon a decimal basis be devised and secure general acceptance in the countries now using Imperial units, it may be found that these units are, after all, destined to survive. R. J. T.

Influenza.

Influenza: Essays by several Authors. Edited by F. G. Crookshank. Pp. xii + 529. (London: W. Heinemann (Medical Books), Ltd., 1922.) 30*s*. net.

A VALUABLE series of essays is given in this volume, bringing our knowledge of this devastating disease up-to-date, and at the same time demonstrating the nebulous character of this knowledge and our impotence in face of its recurring pandemics. From the wider point of view the contributions of Drs. Crookshank and W. H. Hamer are especially valuable. The seven chapters contributed by Dr. Crookshank would have been even more valuable than they now are, had he condensed them and treated his subject more systematically. They bear evidence of previous separate publication, with considerable repetition and occasional laxness in sequence of matter.

The rest of the volume is occupied by chapters on the clinical and therapeutic aspects of influenza, which need not detain us, and by a chapter of 175 pages dealing with the bacteriology of influenza, which would have gained greatly by severe condensation.

The chief interest of the volume, however, consists in a full statement of the special views respecting influenza which the lucid and skilful writing of Dr. Hamer, ably seconded by Dr. Crookshank, has rendered important; and every one wishing to study the epidemiology of influenza, and to learn another view than that apparently favoured in the official report of the Ministry of Health, will need to study these chapters carefully.

The question at issue is whether influenza, in the various forms which are usually recognised as this disease, is a single specific disease, due to a special contagium, which may or may not be the Pfeiffer bacillus; or whether the same virus may not also be the cause of "phases" of influenza, including cases in which the nervous centres are seriously affected, and in which the varieties of disease included in the Heine-Medin symptom complex occur.

Dr. Hamer evidently looks to a filter-passing organism as the likely key to the position, and avers that "most of the 'causal organisms' of bacteriology can be shown to be mere upstart associated organisms or secondary invaders." Using Dr. Crookshank's conception that three fundamental factors are concerned, namely, the disease, the epidemic, and the epidemic constitution, Dr. Hamer advocates the hypothesis that *the* cause of the disease, of the epidemic, and of the epidemic constitution "is the mutating *vera causa* or primary influence," which may be some ultra-visible organism. Much stress is laid on the epidemics which commonly precede and follow, or are associated with, typical influenza. Dr. Hamer evidently thinks that much of the trench fever in the recent war was influenza. This may be so, in a proportion of the cases in which an error of diagnosis was made; but this would not apply to the cases of true trench fever, the communicability of which by body lice has been demonstrated. A reference to Malta fever is similarly confusing; for if this is to be regarded as belonging to the large influenzoid group, it is remarkable that it should be entirely preventible by boiling all goat's milk which is consumed by human beings. In Dr. Hamer's words, "in thickly inhabited areas of the globe a kind of law of coincidence or of overlapping of cerebro-spinal fever and poliomyelitis and pandemic influenza" is visible. This relationship it is maintained is "not simply and solely one of concurrence, but of regulated development in definite sequence," and Creighton, our leading historical epidemiologist, is quoted in favour of the contention that we must keep in mind "gradations, modifications, affinities," and be "careless of symmetry, of definitions or clear-cut nosological ideas, or the dividing lines of a classification."

With this general proposition we are in accord, and we may agree also that fixity of type of epidemic diseases and their causal organisms is not to be assumed; but, taking the three diseases just named, it requires much imagination even to assume that they can all be due to variants of a common infection. Our knowledge of the infecting agent in poliomyelitis is now considerable; and although the proof that the meningococcus is the cause of cerebro-spinal fever is not absolutely complete, the converging evidence of bacteriology and vaccinal treatment is strongly in favour of this conclusion. Without adequate reason, to assume that the contagia of diseases which are commonly associated are variants of a common contagium is a retrograde scientific step; it appears much more probable that the true explanation of the frequent association or sequence of influenza, poliomyelitis, encephalitis lethargica, and cerebro-spinal fever is that the "epidemic constitution" in these years favours the whole group of infections and not merely one of them—influenza. There is close analogy between this view and the view which explains the coincidences and sequences in seasonal and pandemic occurrence of scarlet fever, puerperal fever, rheumatic fever, diphtheria, to which attention has been directed in investigations by Longstaff and Newsholme. It can scarcely be contended that all these diseases are manifestations of a common infecting agency.

The view just stated appears to be confirmed in the article in the present volume by Dr. Dwight Lewis of Newhaven, U.S.A. Classical influenza, in his view, is caused by the Pfeiffer bacillus, but "the various waves of the so-called pandemic of influenza were caused by consecutive and increasing prevalences of correlated diseases due to the activation of carriers of the organisms of these diseases, whether by the influenza bacillus or by the streptococcus." There is no difficulty in believing in what we may call a first-cousinship of diseases, in the influence of one or other of these in increasing the virulence of another, and especially in believing in the death-dealing quality of their combined operation, as, for example, that of the organism of influenza and of the *Streptococcus hæmolyticus*.

The criticisms in the last chapter of the Government report on influenza are interesting. There is just enough truth in the statement that "what is not recorded, or is not known to be recorded, does not officially happen," to give it tang.

Dr. Crookshank appears to differ gently from Dr. Hamer in the description of the intercurrent maladies as "phases of influenza," and suggests that these "specialised" epidemics should be described as *influenzoid*. With considerable imagination, he suggests that the recognition of these would be the first step towards the foretelling of the imminence of pandemic influenza. If this ever become practicable, it will constitute an important advance in our knowledge; but meanwhile we are all familiar with sporadic cases of these diseases which are not followed by epidemic influenza.

In short, this contribution to the subject is provocative of thought; and we hope also that it will lead to more exact epidemiological as well as bacteriological investigation. It presents a better philosophy of epidemicity than is usual; and Dr. Crookshank's contributions on this aspect of the problem will repay study. We rather think, however, that he is somewhat astray in apparently thinking that the importance of "epidemic constitution"—as a factor in producing pandemicity—is not generally recognised. This is the mystery of mysteries, and we have not yet approached its solution. But we must approach it; for recurring pandemics of influenza like the recent one are more serious to civilised mankind than even the Great War.

History of Electrotherapy.

An Essay on the History of Electrotherapy and Diagnosis. By Hector A. Colwell. Pp. xv + 180. (London: W. Heinemann (Medical Books) Ltd., 1922.) 17*s.* 6*d.* net.

AN essay of 171 pages indicates a healthy respect for the subject treated and this is handed on to the reader who peruses it. Dr. Colwell has in some ways been fortunate in his subject, because it is one which yields to historical treatment when approached by a scholar. Of the evidences of this latter quality there is plenty of proof throughout this essay; there is a happy blending of historical accuracy, judgment in selection of facts, and a sense of the real importance of the subject of electrotherapy. The parent subject is now rather apt to be somewhat eclipsed by the more youthful one of radio-therapy, yet the benefit derived from electro-therapeutic measures in diagnosis and in the treatment of many diseases is a matter which need not be laboured.

Perhaps more than in any other branch of the healing art, the scientific advance of the subject to its present position has been one long series of spasmodic efforts interspersed between long periods of quiescence and indeed neglect. The neglect was probably the rational outcome of the conditions of quackery which often showed itself in the application of electricity to the ills of the human body. It is probably not very far from the truth to correlate this halting progress of the subject with the parallel state of affairs in the study and researches of a physical character into the nature of electricity itself.

It is interesting to read that a professor of physics, one Jallabert of Genoa, is to be regarded as the first scientific electrotherapist; for it is a matter of history that, in 1747, in collaboration with the surgeon Guyot, the electrical current was employed by him to produce muscular contractions in injured limbs, thus giving them the exercise necessary for the restoration of their normal functions. Though this is the case, the founding of modern electrotherapy occurred almost a century later as a result of the work of Duchenne of Boulogne.

The essay traces the growth of the subject to the present day. The last forty pages are devoted to the subject of radiology, but perhaps the lapse of time since the discovery of X-rays has been insufficient for a successful treatment of the subject on historical lines. Four pages of notes and an index complete a volume which is very well produced and illustrated by a number of plates of great individual interest.

The author is to be congratulated on an essay which marks out so clearly the milestones which have been passed and the obstructions which have been met in the journey of electrotherapy to its present-day status.

Mustard Gas Poisoning.

The Medical Aspects of Mustard Gas Poisoning. By Prof. A. S. Martin and Dr. C. V. Weller. Pp. 267. (London: Henry Kimpton, 1919.) 42*s.* net.

THIS volume is a belated account of investigations carried out at Michigan during the war; in 1917 it would have been eagerly welcomed, at the date of publication which it bears it would have been decidedly interesting, at the present time it will only be so to specialists and historians. It tells, with a wealth of detail which seems needless, of the effects of β-β-dichlorethyl sulphide, or mustard "gas," on various animals and on men accidentally gassed with it at factories in America where the substance was manufactured for gas offensive purposes during the war.

The substance is a general protoplasmic poison, readily penetrating the epidermis and other tissues; once inside the cells it is probably hydrolysed, and the extensive damage is due to local liberation of hydrochloric acid. The chief effects are therefore a destruction of all the cells with which the substance comes into contact; the eyes, lungs, and skin are the most likely to be affected, and the danger lies chiefly in the fact that the substance has but little smell, so that dangerous concentrations may be encountered without arousing suspicions in those unacquainted with the properties. As the substance is a liquid of high boiling-point, soil or other materials which have been fouled with it may remain a source of danger for days.

Treatment of the affected parts is directed chiefly to the alleviation of symptoms; chlorine destroys the substance, so that local application of hypochlorites is useful in the treatment of skin burns, which are the most troublesome effects likely to be met with in men whose eyes and lungs are protected by the wearing of respirators.

The reviewer himself worked out the chief physiological effects of this substance on animals in the spring of 1916, at the suggestion of his colleague Dr. H. W. Dudley; the results were reported through the proper channels, but were not published. The Germans first used the substance some fifteen months afterwards.

The work before us is the most complete and accurate